



A prototype Ground-Based Interceptor lifts off at the Ronald Reagan Ballistic Missile Defense Test Site on Kwajalein Atoll.

Where We've Been, Where We're Going in Space and Integrated Missile Defense

By Lt. Gen. Joseph M. Cosumano, Jr.

We have been saying for a long time that “Space Enables Transformation” and “Space Enables Missile Defense.” The truth of those adages has been proven by recent events that have again highlighted for the American public we serve just how much, and how well, its military can use products provided by space-based assets and leverage information and data that pass through the medium of space.

In the Global War on Terrorism, two examples in particular come to mind: the successful Predator-Hellfire attack on a vehicle in Yemen carrying a top Al Qaeda leader and the extensive use in Afghanistan of Global Positioning System guided munitions. Both cases were made possible by space-based intelligence, surveillance and reconnaissance, and positioning-navigation capabilities, and facilitated by space-based communications that allowed rapid decisions and immediate execution. In the missile defense arena, the Ground-Based Missile Defense (GMD) System testing has been assisted by space-based sensors and communications.

Other events that might not have made the nightly news were just as important. Immediately after the attacks of September 11, 2001, the North American Aerospace Defense Command (NORAD) and national authorities called on the

Army to assist in developing and coordinating space and missile defense support to Operation Noble Eagle. As operations commenced in Afghanistan, Army Space Support Teams (ARSSTs), including the first Army National Guard ARSST, were deployed to enhance the intelligence and planning capabilities of units on the ground in Operation Enduring Freedom. Joint Tactical Ground Station (JTAGS) detachments provide combatant commanders with in-theater missile attack warning.

To support U.S. Space Command, we formed an Army Space and Information Operations (IO) Element to synchronize space and comprehensive IO support to the combatant commanders. The Space-Based Blue Force Tracking Mission Management Center is allowing commanders to maintain situational awareness of their forces and systems, while the personnel manning the Army Space Operations Center continue to provide a vital “reachback” source for space operations officers around the world.

Meanwhile, the Army has continued to perform our equally important research, development and acquisition tasks in the development and testing of the GMD system, as well as other space and missile defense technology efforts.



The 193rd Army Space Support Team in Kuwait. From left, top row: Capt. Jason Held, Staff Sgt. David Garbus, Maj. Mathew Nowak, and Staff Sgt. James Dunlap. Bottom row: Sgt. 1st Class Howard Caraway and 1st Lt. Angie Tofflemeyer.

In 2002, the Secretary of Defense announced a major reorganization of the management of our nation's ballistic missile defense development efforts—establishing the Missile Defense Agency (MDA) and redirecting its activities toward development of a single, layered and integrated Ballistic Missile Defense System (BMDS) that will eventually include ground, sea, air and space-based elements. The U.S. Army space and Missile Defense Command (USASMDC) serves as the user representative and “warfighter advocate” in the development of the GMD system, the most mature component of the BMDS. Army active duty and National Guard soldiers will operate the GMD system. USASMDC is working with MDA and the Joint Program Office to ensure the Army's needs are addressed in the system design.

With the demise of the Antiballistic Missile Treaty in June 2001, MDA and the services have been able to implement a key tenet of our acquisition strategy: robust, realistic testing. The Pacific Missile Defense Test Bed, with elements at Fort Greely and Shemya Island, Alaska, Kwajalein Atoll, Vandenberg Air Force Base and elsewhere in the Pacific and Western United States, will support development and demonstration of an integrated layered missile defense system including ground-, sea- and air-based sensors and weapons. Over the next few years, the Test Bed will be used to validate the boost phase, midcourse and terminal defense elements of the BMDS, including supporting sensors and battle management/command, control and communications. It will allow testing of the system against faster, longer-range target missiles than we are using today, and it will allow us to test using different geometric, operational and element configurations.

The Pacific testbed will also serve as the basis of the initial missile defense capability directed by the president to begin fielding in 2004. Up to 20 Ground-Based Interceptors and kill vehicles will be available to give GMD an emergency defensive operations capability.

As the materiel development and test and evaluation communities design and build the BMDS hardware and

testbed, the Joint Air and Missile Defense Organization (JTAMDO), the Army Staff, and USASMDC have been working to prepare a near-term Integrated Missile Defense (IMD) concept of operations by 2004. This concept will meld theater and strategic active ballistic missile defenses into the seamless global architecture called for by the Secretary of Defense.

By definition, IMD encompasses a layered architecture of active ballistic missile defense systems integrated through a battle management/command and control network. This JTAMDO concept of operations (CONOPS), however, does not include attack operations and passive defenses, the other “pillars” of the IMD mission area. Offensive actions against missile launch sites and infrastructure and passive means of protection from the effects of a missile attack are assumed under current doctrine, and will be fully incorporated in the future objective concept and architecture. However, the 2004 CONOPS promotes centralized, collaborative planning and decentralized execution, and recommends a BM/Command, Control, Communication, Computers and Intelligence (C4I) baseline tied to MDA's development of the BMDS. This baseline accommodates multi-theater threats through predetermined courses of action, preplanning, and worldwide sensor netting permitting near-real time defense changes in a rapidly developing environment. It also allows for future missile defense contributions by our allies.

Finalizing a near-term IMD CONOPS is a first step toward fielding and operating a viable BMDS.

The groundbreaking work done at the U.S. Army Air Defense Artillery School (USAADASCH) in its recently published Operational and Organizational Plan for Army air and missile defense forces provides a key document for Army operations in joint and coalition environments. It has been a major Army input to the overall Joint 2004 Concept. We at SMDC have been working closely with USAADASCH and JTAMDO to ensure that Army concepts are embedded in the near term and Objective Joint Operational Concepts wherever possible. And this work has laid the foundation for Army support to upcoming efforts with U.S. Strategic Command and U.S. Northern Command to develop an IAMD CONOPS.



The U.S. Army Space and Missile Defense Command provided its Future Operational Capability Tactical Operations Center for the April 2002 Joint Combat Identification Evaluation Exercise.



Air defense oldiers ready the THEL beam director for recent test supporting the MTHEL laser concept study effort.

Under the new Unified Command Plan, which directed the merger of U.S. Strategic Command (USSTRATCOM) and U.S. Space Command, among USSTRATCOM's assigned missions will be responsibility for global missile defense planning. USSTRATCOM will also assume many of Space Command's missile defense functions, including developing and advocating missile defense and missile warning requirements, identifying and managing space-based support for missile defense, and providing missile attack warning for the continental United States as well as to other regional commands. The new Unified Command Plan also creates the U.S. Northern Command (NORTHCOM), whose commander is dual-hatted as Commander, NORAD. As a combatant command, NORTHCOM's missions include the air and missile defense of North America, sharing many of the same space-based and ground-based sensors required by other regional commanders.

The new IAMD concept, therefore, must support the needs of USSTRATCOM and NORTHCOM. To do so it must include all the operational elements of the missile defense mission area: defensive and offensive air-, sea-, and ground-based capabilities coupled with terrestrial and space based sensors. And it must protect the U.S. homeland, deployed forces, friends and allies against the entire spectrum of air and missile threats, including intercontinental and theater ballistic missiles, cruise missiles, manned and unmanned aircraft and surveillance platforms, rockets and artillery, and other aerial threats.

The Army must also continue its technology development efforts. Directed-energy systems represent a "leap ahead technology" that the Army and SECDEF are counting on to change the face of the battlefield and transform the heavy 20th Century Cold War Army to the more responsive, agile, lethal, survivable, sustainable and deployable Objective Force. The Army has long recognized the potential advantages of lasers, which provide the speed-of-light engagement, precisely controlled effects, deep magazines, low cost per kill, and reduced logistical demands. The Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstrator, developed jointly with Israel, is a proven, operational laser weapon, not a viewgraph or a laboratory experiment. While the THEL demonstrator is available for deployment to Israel if needed, it is also serving as a testbed for Mobile THEL (MTHEL), the next logical step toward developing battlefield laser weapons for the Interim and Objective Forces. The THEL Demonstrator has been used to detect, track and successfully shoot down nearly thirty "Katyusha" 122mm rockets and, most recently as part of the MTHEL Test Bed, several 152mm artillery projectiles in flight. Next year a competitive award will be issued to start building a mobile laser demonstration in 2004. That laser will be tested against mortars, and possibly against cruise missiles and unmanned aerial vehicles. Once a concept is selected for integrating existing high-energy laser technology onto a standard mobile platform, a prototype MTHEL should be available within five years. Additionally, we are

working on solid-state laser technologies that will be able to use diesel or other common battlefield fuels to power the lasers, on a vehicle the size of a High-Mobility, Multipurpose, Wheeled Vehicle (HMMWV). Fighting the air and missile defense battle at the speed of light is almost a reality and the Army is leading the way.

Another important effort in missile defense technology is the Low Cost Cruise Missile Defense/Low Cost Interceptor (LCCMD/LCI) Program. Working in cooperation with the Defense Advanced Research Projects Agency (DARPA), our goal is to field an advanced seeker on an inexpensive interceptor, thereby reducing the need to engage cheap cruise missiles with Patriots and other sophisticated, expensive interceptors. Preliminary testing by DARPA has already begun at China Lake. Flight testing of the LCCMD/LCI is expected to begin in 2005.

With respect to air and missile defense sensors, the United States has limited ability to detect low flying aircraft and potentially hostile maritime traffic approaching our borders. Existing ground and aerostat-based radars cannot see sufficiently beyond the horizon to provide essential warning time to scramble interceptors or other defenses. NORAD urgently needs a high-altitude platform to extend detection ranges and alert times in defense of the homeland. Four regional combatant commanders have also signed letters attesting to their need for the capabilities of such an elevated platform for a multitude of mission applications. USASMDC has been tasked by Commander NORAD to conduct a High-Altitude Airship (Advanced Concept Technology Demonstration (ACTD)). The objective of the High-Altitude Airship ACTD is to demonstrate whether a large, multi-mission, untethered, perhaps solar-powered airship can be operated at 70,000 feet altitude for long periods of time, to validate and refine operational concepts, and to assess its utility as a platform for communications relays, sensors and other missions. This assessment will also make recommendations for transition to a High-Altitude Airship acquisition program.

2003 has been a year of tremendously important and significant activities for the Army in space and missile defense. At SMDC, we have met or are well on our way toward meeting the following goals:

- Moving forward on ground-based missile defense programs, including GMD, Theater High-Altitude Area Defense (THAAD), Medium Extended Air Defense System (MEADS) and SLAMRAAM development efforts; accelerated procurement of Patriot Advanced Capabilities-3 (PAC-3) missiles; upgrading equipment for the 263rd Army Air and Missile Defense Command, South Carolina Army National Guard; and transition of JTACS to the Multi-Mission Mobile Processor (M3P) configuration. We will also continue construction on the BMD Testbed. The Pacific testbed will support a more realistic and stressing GMD flight test program, and will also have an emergency operational capability as early as 2004. The Army will provide all the DOTMLPF products necessary to man and operate the system.



SLAMRAAM will increase air defense firepower on future battlefields.

- Advancing the Army's efforts to bring space support, Integrated Missile Defense planning, Army global strike capabilities, and Information Operations together into a single "Army Strategic Command." Commander USSTRATCOM requires an ability to "reach through" his service components to get the right forces and capabilities he needs to execute his missions while ensuring access and protection of space assets from cyber-attack. To do so he needs only one Army point of contact for air and missile defense, strike, space and IO/CNO support. At the request of the Chief of Staff of the Army, we have already conducted one table top seminar with participants from across the Army as well as several retired general officer "greybeards," to explore the issues of what kinds of support USSTRATCOM may need from the Army, and how the Army might best provide that support. Given the limited resources available, especially trained people, the Army must work and speak with one voice to integrate and optimize IAMD, space and IO to support joint and global warfighting efforts.

- Maintaining our development of innovative, affordable space and missile defense solutions for the Army, MDA and other customers, and transitioning successful technology programs to operational systems. The solutions being developed by USASMDC for defense against intercontinental and theater ballistic missiles, cruise missiles and other air threats, and the space technologies that enable command, control, and communications, are vital for the warfighter to accomplish his mission of fighting and winning on the joint battlefields of the 21st Century.

Secure the high ground!



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